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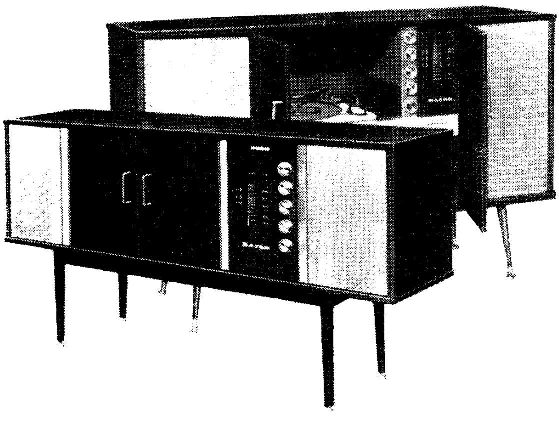
"TRADER" SERVICE SHEET

1776

BAIRD M100 & M102

Fully Transistored A.M./F.M. Stereograms



M100 (front) and M102 (rear), with (below) the circuit diagram of the common chassis

Resistors

R1	27kΩ	A2
R2	560Ω	A2
R3	4·7kΩ	A2
R4	560Ω	A2
R5	1·5kΩ	B2
R7	6·8kΩ	B2
R8	6·6kΩ	B1
R9	1kΩ	B1
R12	47kΩ	B1
R13	6·8kΩ	B1
R14	1kΩ	B1
R15	270kΩ	B1
R16	1·8kΩ	B1
R17	100Ω	B2
R18	56kΩ	B1
R19	1kΩ	B2
R20	220Ω	B2
R21	680Ω	B1
R22	22kΩ	B2
R23	4·7kΩ	B2
R24	8·2kΩ	B1
R25	1kΩ	B2
R26	470Ω	B2
R27	47Ω	B2
R28	560Ω	B2
R29	1kΩ	B2
R30	470Ω	B2
R31	22kΩ	B2
R32	6·8kΩ	B2
R33	18kΩ	B2
R34	1kΩ	B2
R35	12kΩ	B2
R38	1kΩ	A2
R59	25kΩ	A2
R60**	470kΩ	—
R61	50kΩ	B3
R62	22kΩ	B3
R63	68kΩ	B2
R64	12kΩ	B3
R65	5·6kΩ	B3
R66	50kΩ	A2
R67	100Ω	B3
R69	2·2kΩ	A2
R70	1kΩ	A2
R71	1·5kΩ	A2
R72	50kΩ	A2
R73	10kΩ	D5
R74	47kΩ	D5
R75	2·7kΩ	D5
R76	47Ω	D5
R77	1kΩ	D5
R78	2·2kΩ	D4
R79	8·2kΩ	D4
R80	6·8kΩ	D4
R81	VA1038	D4
R82	390Ω	D4
R83	100Ω	D4
R84	100kΩ	D4
R85	47kΩ	D4
R86	220Ω	D4
R87	180Ω	D4
R88	220Ω	D4
R89	47Ω	D4
R90	68Ω	D4
R91	1·2Ω	D4
R92	1·2Ω	D4
R93‡	12Ω	—
R94	2·2kΩ	D5
R100**	470kΩ	—
R101	50kΩ	A1
R102	22kΩ	B2
R103	68kΩ	B2
R104	12kΩ	B2
R105	5·6kΩ	B2
R106	50kΩ	A2
R109	2·2kΩ	A2
R110	1kΩ	A2
R111	1·5kΩ	A2
R112	50kΩ	A2
R113	10kΩ	D5
R114	47kΩ	D5
R115	2·7kΩ	D5
R116	47Ω	C5
R117	1kΩ	C5
R118	2·2kΩ	C4
R119	8·2kΩ	D4
R120	6·8kΩ	D4
R121	VA1038	C4
R122	390Ω	C4
R123	100Ω	C4
R124	100kΩ	D4
R125	47kΩ	C4
R126	220Ω	C4
R127	180Ω	C4
R128	220Ω	D4
R129	47Ω	D4
R130	68Ω	D4
R131	1·2Ω	D4
R132	1·2Ω	C4
R133‡	12Ω	—
R134	2·2kΩ	C5

Capacitors

C1	27pF	A2
C2	1,000pF	A2
C3	1,000pF	A2
C4	12pF	A2
C5	—	A2
C6	—	A2
C7	0·1μF	B2
C8	160μF	B2
C9	1,000pF	A2
C10	3·3pF	A2
C11	680pF	B2
C12	1,000pF	B2
C13	—	A2
C14	—	A2
C15	12pF	A2
C16	68pF	B2
C17	4·7pF	B2
C18	180pF	B2
C28	—	A1
C29	—	A1
C30	37pF	B1
C31	0·01μF	B1
C32	0·015μF	B1

C33
C34
C35
C36
C37
C38
C39
C40
C41
C42
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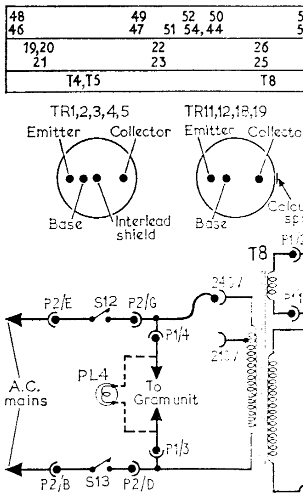
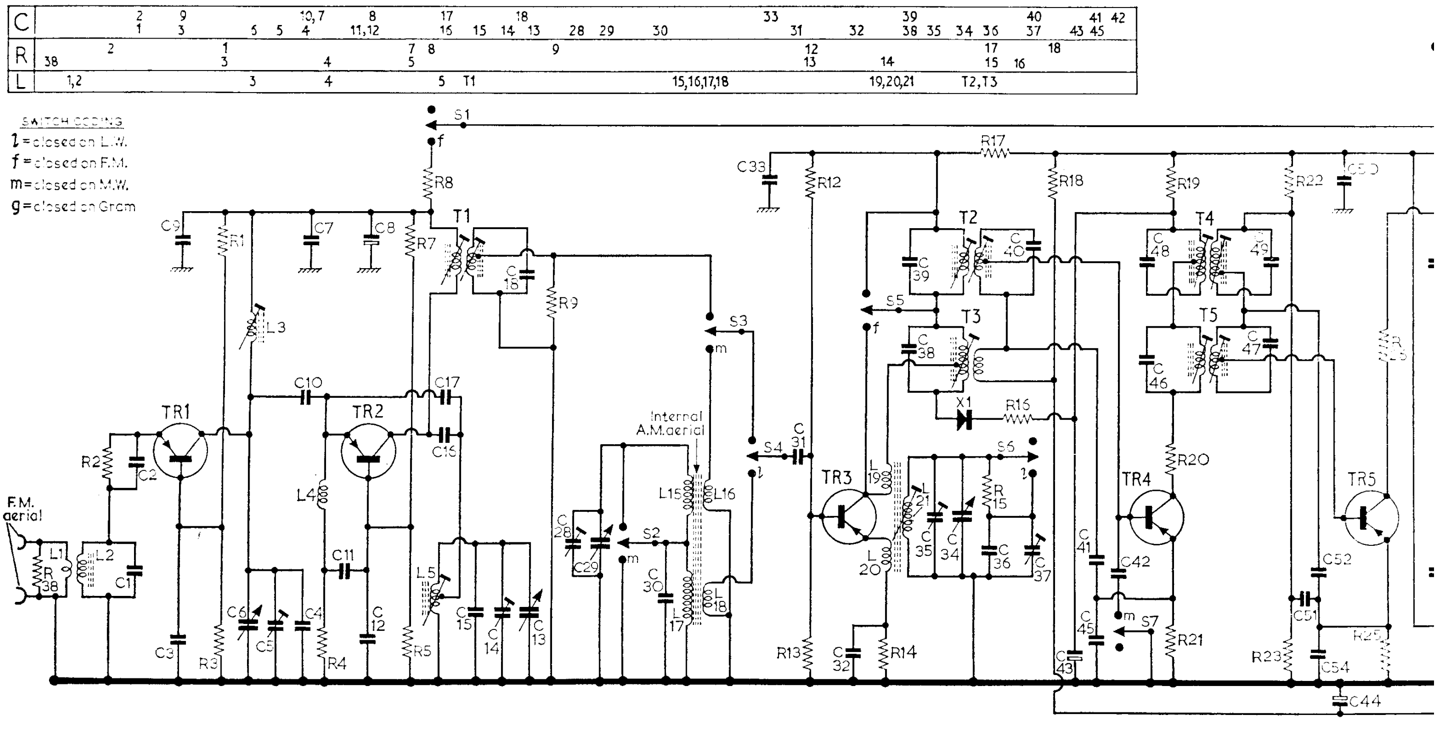
C55
C56





	C33	0·1μF	B1
	C34	—	A1
	C35	—	A1
	C36	120pF	A1
	C37	80pF	A1
	C38	350pF	B1
	C39	180pF	B1
	C40	470pF	B1
	C41	1,000pF	B1
	C42	3,900pF	B1
	C43	2μF	B1
	C44	10μF	B1
B2	C45	0·1μF	B2
A2	C46	180pF	B2
A2	C47	470pF	B2
A2	C48	270pF	B2
B2	C49	270pF	B2
B2	C50	0·1μF	B2
B2	C51	0·02μF	B2
A1	C52	2,000pF	B2
A1	C53	1,000pF	B2
B1	C54	0·5μF	B2
B1	C55	250pF	B2
B1	C56	68pF	B2

C57	270pF	B2
C58	0·01μF	B2
C59	0·01μF	B2
C60	1,000pF	B2
C61	10μF	B2
C62	330pF	B2
C63	0·01μF	B2
C64	160μF	B2
C65	0·047μF	B2
C69	0·47μF	A1
C80	470pF	B3
C81	0·47μF	B2
C82	250μF	B2
C83	20μF	B3
C84	0·047μF	A2
C85	0·1μF	A2
C86	0·1μF	A2
C87	0·1μF	A2
C88	100μF	D5
C89	10μF	D5
C90	1,000pF	D5
C91	250μF	D5
C92	10μF	D5
C93	250μF	D4

C94	250μF	D4
C95	500μF	D4
C100	470pF	B2
C101	0·47μF	B2
C102	250μF	B3
C103	20μF	B3
C104	0·047μF	A2
C105	0·1μF	A2
C106	0·1μF	A2
C107	0·1μF	A2
C108	100μF	C5
C109	10μF	D5
C110	1,000pF	C5
C111	250μF	C5
C112	10μF	D5
C113	250μF	D4
C114	250μF	C4
C115	500μF	C4
C121	3,000μF	C4

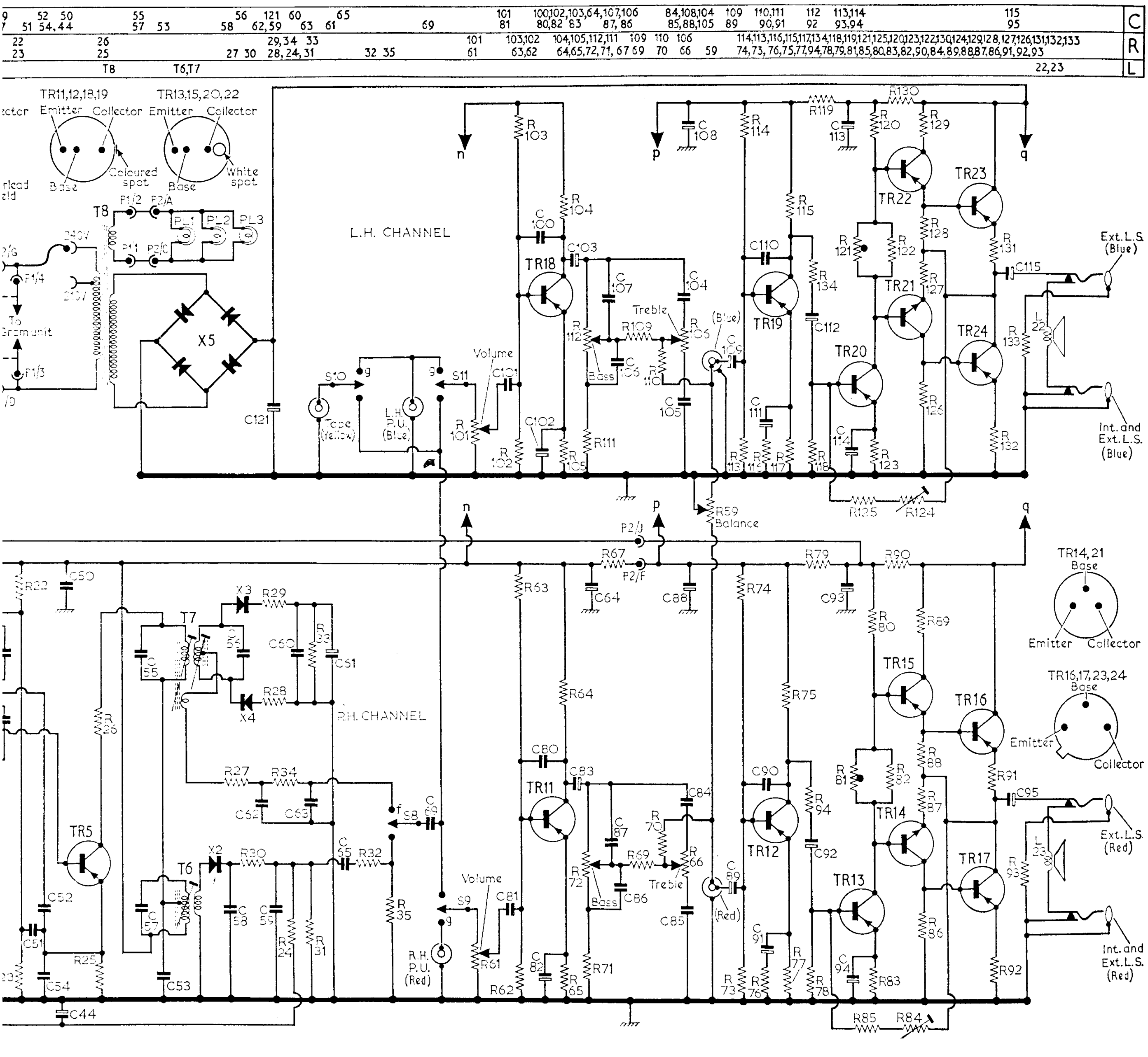
Coils & Transformers

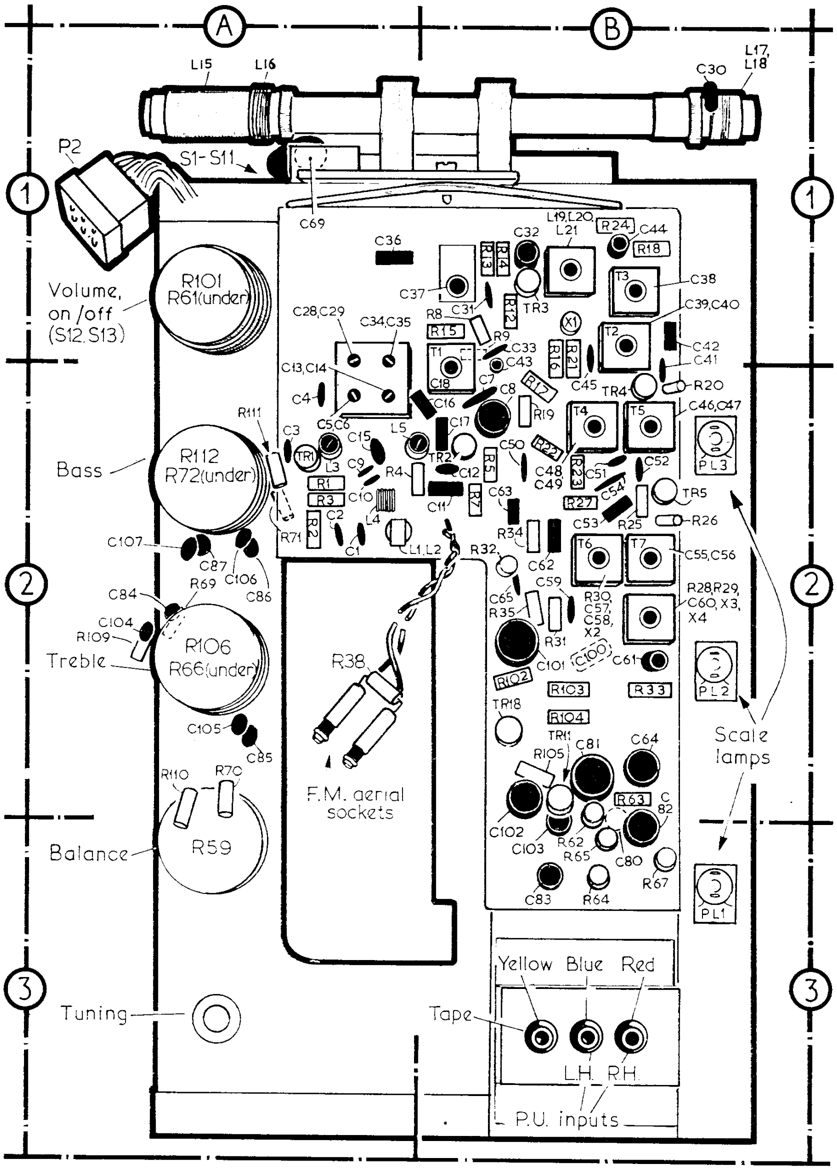
L1	—	B2
L2	—	B2
L3	—	A2
L4	—	A2
L5	—	A2
L15	—	A1
L16	—	A1
L17	—	B1
L18	—	B1
L19	—	B1
L20	—	B1
L21	—	B1
L22	15Ω	†
L23	15Ω	†
T1	—	B1
T2	—	B1
T3	—	B1
T4	—	B2
T5	—	B2
T6	—	B2
T7	—	B2
T8	—	C5

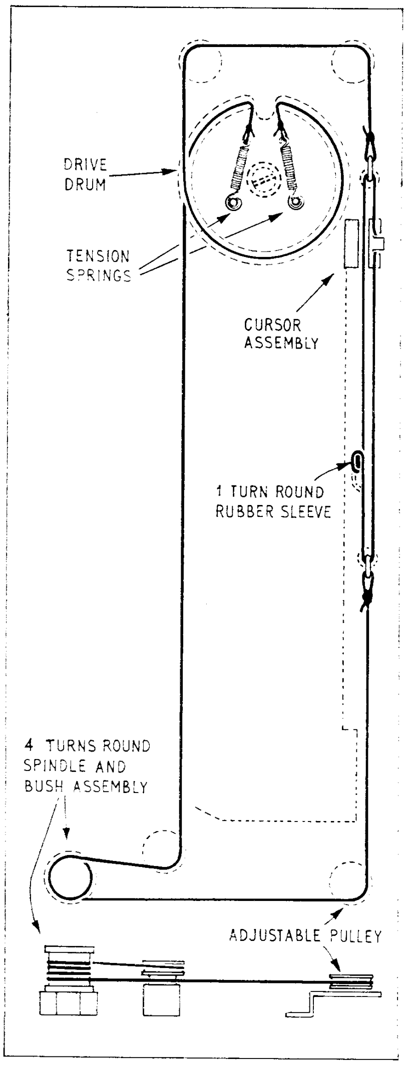
Miscellaneous

PL1	6·3V 0·15A	B3
PL2		B2
PL3		B2
PL4*	10W S.E.S	—
S1-S11	—	A1
S12, S13	—	A1
X1	OA79	B1
X2	OA90	B2
X3	OA79	B2
X4	OA79	B2
X5	B30C 650/350	C4

** Gram compartment lamp fitted to M102 only.*
† Speakers
*** Wired in series with pick-up leads.*
‡Wired behind speaker sockets.






DRIVE DRUM
TENSION SPRINGS
CURSOR ASSEMBLY
1 TURN ROUND RUBBER SLEEVE
4 TURNS ROUND SPINDLE AND BUSH ASSEMBLY
ADJUSTABLE PULLEY

Above: Rear view of the scale drive assembly

Left: Component-side view of the radio panel

OPERATING from 200-250V a.c. mains supplies, Baird M100 and M102 are three-waveband fully transistored a.m./f.m. stereograms which are fitted with an identical chassis. A total of nineteen transistors and four crystal diodes are employed, each of the twin audio channels being designed with transformerless push-pull output stage achieved by the use of complementary transistors in the phase-splitting stage.

Waveband ranges are 1,200-2,000m (l.w.), 184-550m. (m.w.) and 88-100Mc/s f.m. with reception from a partly rotatable internal ferrite rod aerial for long and medium wave and an internal wire aerial for f.m. A socket is provided for the connection of an external f.m. aerial.

Two pairs of sockets are also provided for the connection of two external loudspeakers: one pair permits the use of external loudspeakers with the internal loudspeakers switched on, and an alternative pair connects the external loudspeakers, at the same time switching the internal loudspeakers off. A further socket enables the detector output (a.m. or f.m.), or signals from the pickup, to be fed to a tape recorder and tape signals to be played back through one amplifier channel.

Record changer incorporated is the B.S.R. Monarch UA15 four-speed, with ceramic crystal stereo cartridge type C1/ST3.

CIRCUIT ALIGNMENT

Equipment Required.—An a.m. signal generator modulated 30 per cent; an f.m. signal generator with 15-75kc/s deviation; an output meter with an impedance to match 15Ω; an oscilloscope; an r.f. coupling coil and suitable trimming tools.

A.M. Circuits

During alignment, output from the signal generator should be reduced, so that the receiver output does not exceed approximately 50mW at the speaker, to prevent a.g.c. action.

1.—Connect the oscilloscope or output meter across one loudspeaker. Switch receiver to m.w. and fully mesh the tuning gang. Turn the volume control to maximum.
2.—Connect the a.m. signal generator to the r.f. coupling coil and couple the coil to the receiver to obtain an output reading. Feed in a 470kc/s 30 per cent modulated signal and adjust the core of **T6** for maximum output. Note: **T6** has more than one tuning point; the correct one is that which occurs with the core nearest the top of the former.
3.—Adjust both cores of **T4** (bottom core first) for maximum output, then adjust **T3** core for maximum output. (**T4** cores should be set to the tuning point which occurs nearest the ends of the coil former.)
4.—Repeat operations 2 and 3 for optimum results.
5.—Set all four trimmers on the rear of the tuning gang to their mid-position. With the tuning gang fully meshed, check that the cursor is in line with the calibration spots at the l.f. end of the scale.
6.—Switch receiver to m.w. and tune to 500m. Feed in a 600kc/s signal and adjust **L21** and **L15** for maximum output.
7.—Tune receiver to 200m. Feed in a 1,500kc/s signal and adjust **C35** and **C28** for maximum output.
8.—Repeat operations 6 and 7 for optimum output and correct calibration.
9.—Switch receiver to l.w. and tune to 1,800m. Feed in a 166.6kc/s signal and adjust **C37** and **L17** for maximum output. Repeat for correct calibration.

F.M. Circuits

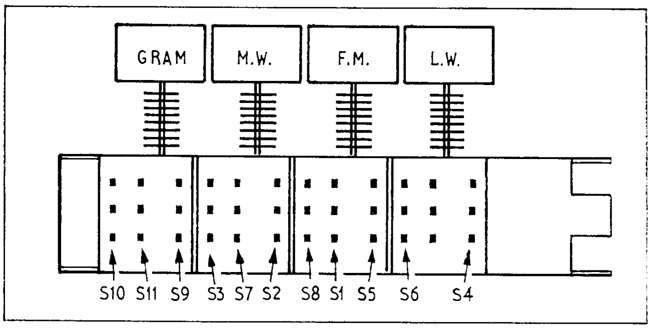
1.—Switch receiver to f.m. and tune to 88Mc/s. Set the top and bottom cores of **T1**, **T2**, **T5** and **T7** flush with the ends of the formers.
2.—Connect the oscilloscope across one loudspeaker and connect the f.m. generator to **L1**. If sufficient input signal to observe an output is not available,

Transistor Table

Transistor		Emitter (V)	Base (V)	Collector (V)
TR1	AF114	0·7	1·0	6·9
TR2	AF115	0·9	1·2	6·9
TR3	AF116	0·7	0·9	6·9
TR4	AF116	0·8	1·0	5·6
TR5	AF116	1·0	1·1	6·8
TR11	OC75	1·5	1·4	3·2
TR12	OC75	1·05	1·0	4·5
TR13	OC81D	0·2	0·32	15·15
TR14	AC127	15·3	15·15	0·2
TR15	OC81	15·7	15·85	30·0
TR16	GP297/1	15·5	15·7	30·0
TR17	GP297/1	0·02	0·2	15·5
TR18	OC75	1·5	1·4	3·2
TR19	OC75	1·05	1·0	4·5
TR20	OC81D	0·2	0·32	15·15
TR21	AC127	15·3	15·15	0·2
TR22	OC81	15·7	15·85	30·0
TR23	GP297/1	15·5	15·7	30·0
TR24	GP297/1	0·02	0·2	15·5

Measured on model 8 Avometer under "no signal" conditions

The waveband switch unit as seen from above showing individual switches which are press-button operated



the generator may be connected via a blocking capacitor to the base of **TR3** or **TR4** as required. As the circuits are brought into resonance the signal generator connection should be moved back towards the aerial coil.

3.—Feed in a 10.7Mc/s f.m. signal, 15kc/s deviation, and adjust the top core then the bottom core of **T7** for maximum output. (Two tuning points occur on the bottom core adjustment with a minimum between. The second maximum is the correct tuning point.)

4.—Adjust the top and bottom cores of **T5**, **T2** and **T1**, bottom core first in each case, for maximum output.

5.—Switch the modulation to 70kc/s deviation and readjust the i.f. cores in the same order for good symmetry of the positive and negative half-cycles of the sinusoidal output waveform.

6.—Set the core of **L3** approximately 4 turns from the top of its former and the core of **L5** flush with the top of its former. Adjust **C5** and **C14** to their mid-position.

7.—With the receiver tuned to 88Mc/s, feed in an 88Mc/s 75kc/s deviation signal at the aerial coil and adjust **L5** and **L3** for maximum output.

8.—Tune receiver to 100Mc/s. Feed in a 100Mc/s signal and adjust **C14** then **C5** for maximum output.

9.—Repeat operations 7 and 8 for correct scale calibration.

DISMANTLING

Radio Panel Removal.—To remove the radio panel, first remove the back panel at the rear of the chassis compartment.

Remove the control knobs. These are fixed with grub screws. Remove the large wood screw from the centre of the aerial rotating wheel and disconnect the ferrite aerial operating rod.

Unplug the three plugs coded red, blue and yellow from the radio chassis (these are connections from pick-up and tape recorder socket) and the internal f.m. aerial from the back of the f.m. aerial socket.

If the amplifier chassis is not being removed, unplug the 9-pin power plug **P2** and the two plugs at the rear of the amplifier.

Remove the three 4BA nuts which secure the radio panel. One nut is positioned between the volume control and the bass control and the other two are at the extreme right hand ends of the top and bottom chassis members. The nuts which are accessible through the scale lamp bracket can best be removed with a box spanner. The radio panel can now be lifted clear.

Amplifier and Power Chassis Removal.—To remove the amplifier and power chassis, first remove the back panel at the rear of the chassis compartment.

Unplug the 9-pin power plug **P2**, from the chassis near the mains transformer.

Loosen the chassis fixing screw which is on the cabinet side member to which the chassis is secured. Remove the two fixing screws in the wooden side batten.

Unplug two plugs coded red and blue, the strip plug, and the 4-pin plug **P1** from the rear edge of the chassis. The amplifier chassis can now be removed from the cabinet.

Auto-Changer Removal.—To remove the auto-change unit, first remove the hardboard panel which covers the interconnecting leads, from the underside of the cabinet.

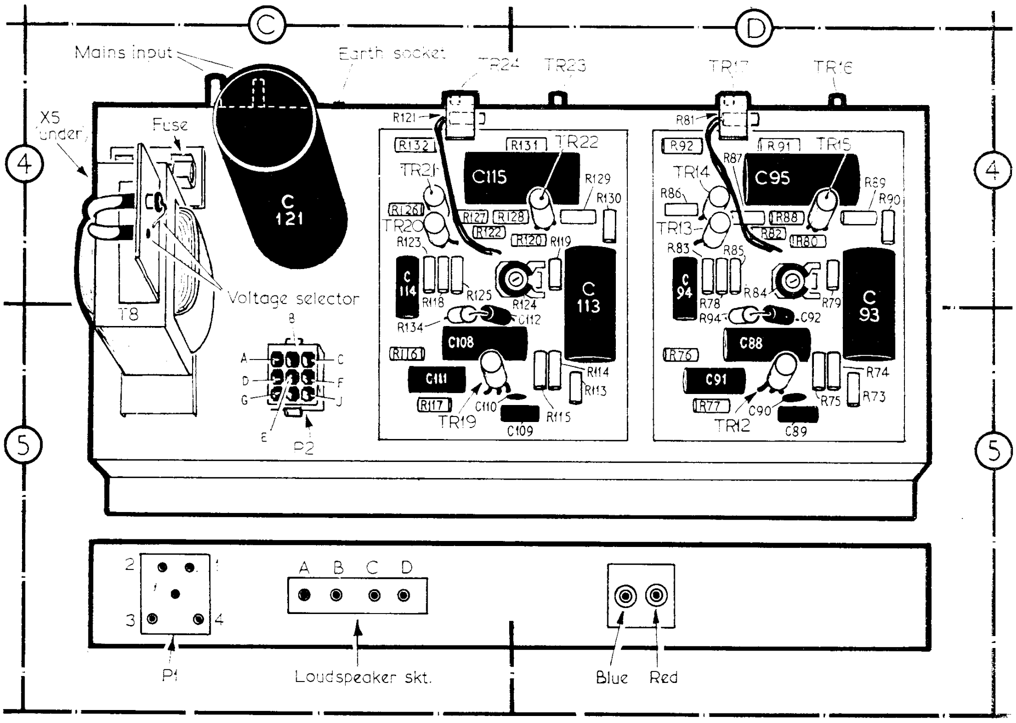
Unplug the two plugs (coded red and blue) from the radio chassis, thus disconnecting the pick-up.

Unplug the motor supply leads from the 4-pin socket **P1** on the amplifier chassis. Remove the inspection cover on the underside of the gram compartment and gently pull both sets of leads into the compartment.

Push the clips on the auto-changer transit screws into a vertical position. The auto-changer can now be lifted out of the cabinet.

GENERAL NOTES

Switches.—Waveband switches **S1-S11** are combined in a press-button unit shown in location reference A1. On the circuit diagram each switch is given a key letter showing the position in which it closes when the associated press-button is depressed, e.g. when the f.m. button is depressed **S1**, **S5** and **S8** close in the position marked *f*; all other switches close in the unmarked position.



Plan view of the amplifier and power chassis. Preset controls **R84** *and* **R124** *should be adjusted to obtain a symmetrical output wave form by checking the d.c. voltage conditions at the junction* **TR17/C95** *and* **TR24/C115.**

Using model 8 Avometer, switched to 100V d.c. range, measure voltage across **C121** *with no signal input. Halve this voltage, then add 0.4V. Connect Avometer between chassis and junction* **TR17/C95 (TR24/C115)** *switched to 25V range. Adjust* **R84 (R124)** *to read the voltage previously calculated*

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